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INFORMATION REPORT

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COUNTRY: Yugoslavia

SUBJECT: Status of Medicine, Medical Training, Research and Public Health

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Organization of Medical Services

1. There are two types of medical service: (1) State, and (2) private. There are many private doctors in Yugoslavia. They are entirely free from governmental controls, and they are the rich men among professional workers. There is a shortage of medical manpower. There are only five to six thousand MDs in Yugoslavia for a total population of 17 million. This is one of the principal bottlenecks to good medical service. The quality of performance of private practitioners is much higher than that of state doctors. It is still the ideal of the medical man to have his own practice. The people do use private doctors even though they have to pay for such services.
2. It is compulsory for every medical student, upon completion of his medical studies, to spend two years working for the State. Young doctors perform such services as working in rural areas with an ambulatorium (office). Only after the performance of such service are doctors eligible for more advanced, specialized training. These offices, or ambulatoria, have overly heavy patient loads because of the lack of doctors. Gradually, they are getting good equipment, e.g. electrocardiographs; most of such equipment comes from Germany. These ambulatoria have two sets of doctors: one to take care of incoming patients, and one set to go out to visit patients.

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3. Health Insurance: The ambulatoria are state-owned and the patients are all covered by public insurance. Insurance is paid by the government and by the factory or office where the individual works, 50% by each; the individual pays nothing on his own insurance. When a person becomes sick, if he works he gets a form from his employer to take to the doctor. If the person is not employed he may still go to the doctor in the ambulatorium and get free treatment; obtaining the necessary form might take a little longer. About two-thirds of the doctors in Yugoslavia practice under this insurance plan. Some work full time for the state, and others have part time private practice. The national health insurance program is a very good idea, but the quality of this state service is inferior.
4. Preventive Medicine: Preventive medicine plays a greater part in Yugoslavia than in Western countries, because primitive hygienic conditions exist in Yugoslavia. Many doctors cannot do public service because they don't have training in this type of medicine (this applies especially to the older doctors). After World War II quite a number of German doctors were invited to Yugoslavia to help get the medical profession started again, but this was not too successful because the Germans lacked the necessary preventive medicine training. The main preventive medicine problems in Yugoslavia are: (1) general hygienics in disease, and (2) nutrition for children. With UN and UNICEF help after World War II, two diseases were erased in Yugoslavia. They were: (1) epidemic typhus (knocked out by DDT), and (2) endemic syphilis (treated with a form of penicillin).

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Medical Education Facilities

5. Yugoslavia has five medical schools: (1) University of Belgrade, (2) University of Zagreb, (3) University of Sarajevo, (4) University of Ljubljana and (5) University of Skoplje. The Belgrade and Zagreb schools were established after World War I; Sarajevo was founded in 1944 or thereabouts, and the medical schools at Ljubljana and Skoplje were set up after World War II. A fixed number of medical students is authorized for each school. At Belgrade and Zagreb two hundred students are accepted in the beginning class. At the three smaller schools (Sarajevo, Ljubljana and Skoplje) one hundred students are admitted to the first class. There are five classes to the medical training, and six years is the average amount of time it takes to complete medical school and a year of interning. In recent years the output of doctors from the medical schools each year has been about five hundred.
6. Medical students don't pay anything for their training. They are paid three thousand dinars per month for their living expenses (about US\$10); their tuition is paid for them, and they receive their textbooks free. Usually they get some extra financial help from home. They are paid by the government for only the average amount of time it takes to finish medical school, and the student must finish within that allotted time or pay his own way for any time in school beyond that authorized. There is no way for a student to earn supplemental income from odd jobs, as is done in the US. A few good students are used as demonstrators or sub-instructors, but that is all.
7. The Yugoslav medical schools combine, to a certain degree, the US and European systems. (In most European universities there is no limitation on the number of students permitted to attend medical school, but an entrance examination is required.) At Yugoslav medical schools about 25% of the students are flunked throughout the course. The students now come from all economic levels without discrimination.

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8. Administration of Medical Schools and Sources of Funds: The universities of Yugoslavia are under the direction of the Ministry of Science and Culture, but the medical schools are under the Ministry of Public Health and Social Welfare. [REDACTED] it was the Public Health section of the Ministry which held the responsibility for the medical schools, while the funds for the support of the medical students themselves came from the Social Welfare section of the Ministry. [REDACTED]
9. The medical school at the University of Sarajevo receives 180 million dinars per year (about US\$600,000). This is more money than the other parts of the University receive. The medical school is better off than the other faculties. This 180 million dinars is used, among other things, for the payment of teaching staff salaries, for all equipment, but not for the buildings nor for the non-teaching staff. The money for the students' tuition and other expenses does not come out of this 180 million dinars either. The Ministry of Health makes its grant to the medical school; what is done with the money is up to the faculty. They are the deciding body. The full, associate and assistant professors, together with the dean, who has a little more voice than the other professors, make up the budget. The position of dean is rotated every year or every second year. With the office of dean goes a car and chauffeur. The funds provided for the Sarajevo medical school are typical, except that Belgrade and Zagreb, having more students and a consequent need for more facilities and staff, receive proportionately more money.
10. There is a shortage of residents and of assistant doctors at the universities [REDACTED]
11. There are no separate departments of biochemistry at the medical schools in Yugoslavia. At the University of Sarajevo Medical School the Physiology Department is the largest, which may be explained by the fact that the first dean of the school was also head of that department.

Medical Faculty Members and Their Research Work and Facilities

12. Pharmacologists:
- a. Milija Dimitrijević, University of Belgrade. He has not been active since he became head of the Department of Pharmacology. He knows the literature fairly well. He was trained in the school of Flury (Germany). [REDACTED]
- b. Siniša Bogdanović, University of Belgrade, Associate Professor. He is very active and works on vitamins; he found that Vitamin E increases the egg production of chickens.
- c. Ivo Ivančević, University of Zagreb, Chairman of the Department of Pharmacology. He was originally a clinician. [REDACTED]
[REDACTED] in cooperation with an excellent pathologist, he found that ruthin (flavon-derivative) prevents toxicity of Vitamin D₂ (Archiv Internationale de Pharmacodynamie, 1951 or 1952).
- d. Žlatko Supek, University of Zagreb, is Ivančević's assistant. He has training as a toxicologist [REDACTED]
He found that digitalis increases blood coagulation, and also discovered antidiuretic substance in liver. [REDACTED]

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- e. Pavao Stern, University of Sarajevo, is Chairman of the Department of Pharmacology and also Dean of the Medical School for the academic year 1953-54. He was a pupil of Pick (in Vienna). His research work is primarily on diamine oxidase-antihistaminics (mechanism of action) and also on leukemias. He has a fairly large institute with several paid assistants and several voluntary helpers.

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- f. Peter Lenč, University of Ljubljana, Chairman of the Department of Pharmacology. He was a pupil of Pavao Stern, and in the past worked on diamine oxidase of the rat uterus. He is currently testing Digitalis preparations with the pigeon heart method. His laboratory is very poorly equipped.

- g. Dimitrije Atanacković, University of Skopje, Department of Pharmacology. He is a Macedonian and was a pupil of Heymans. He works along the lines of his former teacher on regulation of blood pressure by sino-aortic ganglion. His laboratory has only a few facilities.

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13. Physiologists

- a. Milutin Neskočić, University of Belgrade. His field is comparative physiology.

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(Vran) Djaja, University of Belgrade. He is actually on the Philosophical Faculty (which is the same as Liberal Arts), but he works on thermo regulation of animals. He was the first person to cool animals successfully. He publishes in French scientific journals. He is a great man.

- c. IR Petrović, University of Belgrade, College of Veterinary Medicine; is an MD. He is a good man. He works on histamine and allergy; he has done work on the mode of action of cortisone (effect on permeability on erythrocytes).

- d. N Allegretti, University of Zagreb, Chairman of the Department of Physiology. He is a very young man; he is mainly a pathophysiologist; he works on muscle contraction, and also on ascorbic acid and the insular apparatus of the pancreas. The previous chairman of the department was an old man who was fired.

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- e. AV Saborčević, University of Sarajevo. Formerly studied at the University of Iowa. He is working with radioactive isotopes (phosphorus), on the physiology of the lung (reaction of the lung vasomotors). Equipment for radioactive work is fair and not too different from that found in many sizeable US universities.

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f. Andrej Zupancic, University of Ljubljana. Excellent patho-physiologist. He was trained by, or in the school of, Faltauf (Vienna). He works on the autonomous nervous system and has done a paper on cholinesterase as the receptor for acetylcholine.

g. Milivoje Vidakovic, University of Skoplje, Chairman of the Physiology Department. [redacted] he works on the physiology of the duodenum. [redacted]

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14. Biochemists

Although none of the universities has a special department to cover this field, they do have faculty members who lecture on the subject and engage in related research.

a. Pavle Trpinac, University of Belgrade, [Department of Chemistry?]. Gives lectures in biochemistry for medical students.

b. A Režek, University of Zagreb, Veterinary Faculty, Institute of Chemistry. He is the best enzymologist in Yugoslavia, although the field is not very advanced in our country and needs some help; it still has a long way to go. Režek earns good money from a textbook on biochemistry which he wrote. Currently, he is working on cholinesterase, the role of CO₂ assimilation, thermal waters, and the history of medicine.

c. Ivan Bubanović, also at the University of Zagreb, Department of Chemistry. He gives lectures in biochemistry for medical students.

Ljubljana and Skoplje, similarly, have faculty members who lecture on biochemistry.

Pharmaceutical Industry -- Research and Production

15. The Pliva Company (formerly Gastel) in Zagreb produces the following:

Sulfonamides

Cardiazol

Vitamin C

Paludrin (antimalarial)

Barbiturates, Luminal, Nembutal, Evipan and similar compounds

Local anesthetics, Pantocain

Insulin (self-sufficient)

Other hormones: ACTH, Pituitrin, Parathormon

Yugoslavia is one of the largest producers of alkaloids, with particular reference to morphine, of which Yugoslavia produces the greatest amount in all of Europe. Morphine is produced by a firm in Skoplje. The basis for the synthetic pharmaceutical industry was provided only recently by the introduction of coaltar production (koks).

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16. Some penicillin is made in Yugoslavia, but most of it is imported from Germany. Penicillin is the only antibiotic [REDACTED] make, and [REDACTED] have not developed any new antibiotics. [REDACTED] cannot afford research on a large enough scale to make it worthwhile. Dr. Pavao Stern at Sarajevo has been studying the pharmacological behavior of penicillin, but for research leading to the development of new antibiotics, [REDACTED] are relying entirely on the outside world.

17. As for work on blood and blood substitutes, in the first place [REDACTED] nothing similar to the US method of fractionation of blood [REDACTED]

(fnu) Bloch is in charge of the determination of blood groups and plasma supplies in Belgrade [REDACTED] The question is, how to get artificial replacement substances which remain in circulation and keep water back and prevent shock. The problem is to get large enough molecules to keep the circulation going. [REDACTED] tried Periston, a German substance, but it was too toxic. [REDACTED] however, [REDACTED] would use Periston again. In Yugoslavia the military physicians are studying this question, but they have not yet found anything better.

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